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SNOW SURVEYS AND IRRIGATION WATER FORECASTS

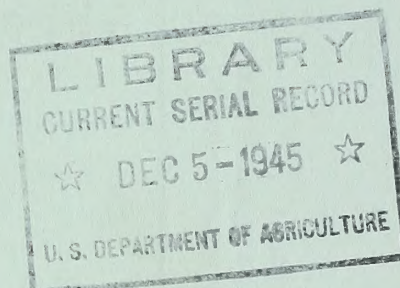
for the

MISSOURI and ARKANSAS

DRAINAGE BASINS

May 1, 1944

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Issued by the  
United States Department of Agriculture  
Soil Conservation Service  
Division of Irrigation  
In Cooperation with  
The Colorado Agricultural Experiment Station  
Colorado State College  
Fort Collins, Colorado

May 10, 1944





# SNOW SURVEYS AND IRRIGATION WATER FORECASTS FOR MISSOURI AND ARKANSAS RIVERS

May 1, 1944

The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service, of the U. S. Department of Agriculture, in cooperation with State departments, other Federal bureaus and local organizations. The snow measurements are made principally by field personnel of the following organizations: Forest Service, National Park Service, Bureau of Reclamation, U. S. Geological Survey, War Department and State Experiment Stations. This work is otherwise conducted cooperatively with the State Engineers of Colorado, Nebraska, and Wyoming, and various municipalities, irrigation associations, power companies and others. Precipitation records are supplied by the U. S. Weather Bureau.

## PRECIPITATION DATA (Based on incomplete returns)

WATERSHED	STATE	Precipitation October 1 to April 30	Departure from Normal	Precipitation April	Departure from Normal
		Inches	Inches	Inches	Inches
Missouri	East. Mont.	4.25	-0.55	0.95	-0.15
Missouri	Cent. Mont.	4.10	-1.69	0.78	-0.42
Missouri	North. Wyo.	9.61	-0.44	2.30	+0.45
North Platte	Wyoming	7.29	+0.27	1.90	+0.48
South Platte	Colorado	11.40	+2.11	4.85	+2.29
Arkansas	Colorado	8.29	+1.46	3.46	+1.64

Precipitation during April was above normal except in central and eastern Montana. The accumulated precipitation from October 1 to April 30 is above normal except in Montana and northern Wyoming. Conditions in Colorado and most of Wyoming are excellent.



SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA  
WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth		Water Content			Number courses in Average	Snow Density		1943 Water Content in percent of	
	Nine year Avg.*	1943	1944	Nine Year Avg.*	1943		1944	Nine Year Avg.*	1943	
MISSOURI RIVER	In.	In.	In.	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Jefferson River	27.4	36.4	30.8	10.3	3	38	45	95	59	
Madison River	36.9	54.2	29.7	16.2	5	44	51	68	40	
Gallatin River	28.7	32.2	33.0	10.6	3	37	45	98	71	
Missouri River**	13.1	19.1	13.6	4.2	5	32	33	91	59	
Marias River	12.9	20.0	7.9	5.6	2	43	46	45	27	
Yellowstone River	21.5	37.9	26.9	7.1	1	33	44	84	36	
Shoshone River	36.4	51.5	35.3	14.2	2	39	48	76	44	
Bighorn River	23.4	25.2	35.8	8.0	10	34	43	125	92	
Tongue River	8.7	0.0	25.8	2.6	1	30	--	219	--	
Powder River	15.9	9.6	32.1	4.8	2	30	27	242	447	
North Platte River	43.0	25.4	46.8	16.7	11	39	45	88	130	
Sweetwater River	34.5	39.3	56.4	11.8	2	34	44	148	100	
Laramie River	26.5	16.9	36.8	9.6	7	36	42	117	158	
South Platte River***	15.8	13.0	29.3	4.8	3	30	35	175	187	
Crow Creek	7.1	0.0	21.7	1.9	1	27	--	342	--	
Poudre River	34.4	22.6	38.2	12.6	4	37	44	92	117	
Big Thompson River	55.3	41.4	58.6	18.0	2	32	40	94	102	
St. Vrain River	38.0	37.0	50.8	13.3	1	35	39	128	117	
Boulder Creek	30.7	25.0	37.8	11.1	2	36	45	118	116	
Clear Creek	47.6	30.0	55.0	15.6	2	33	39	108	145	
ARKANSAS RIVER	28.0	11.5	41.1	9.6	9	34	38	134	293	

\*Some for shorter periods. \*\*Headwaters of Missouri River. \*\*\*Above Denver, Colo.



WATER SUPPLY OUTLOOKMONTANA

MISSOURI RIVER AND TRIBUTARIES. On the headwaters of Missouri and its tributaries the water content of the snow now averages 8 inches, last year it was 16.5. For the several tributaries the average water contents are as follows: Jefferson now 9.8 inches, and 16.5 inches May first 1843, Madison 11.1 and 27.8, Gallatin 10.4 and 14.6, Marias 2.5 and 9.2, Yellowstone 6.0 and 16.8, and for the Missouri 3.8 and 6.4. The storage in the principal reservoirs is the same as last year at this time. Soil moisture is variable in the different irrigated areas but is generally fair to good and the stream flow subnormal for this season of the year. The outlook for the coming irrigation water supply is favorable. Last year the runoff was excessive and although the present water storage in snow is only one-half that of a year ago, it is estimated that the runoff will approach normal. This situation together with a substantial amount of water in storage will result in providing adequately for meeting the irrigation needs this coming season. Because of deficiency in snow cover on the Marias and Yellowstone there may be a moderate shortage in late water.

WYOMING

SHOSHONE. The water content of the snow on this drainage now averages 11 inches in comparison with 25 a year ago. The Shoshone Reservoir now contains 304,000 acre-feet of water, or two-thirds capacity. The runoff is expected to fill this reservoir to spillway level during the period of peak runoff. On the Shoshone Project the soil moisture is fair to good, stream flow has been less than average because of cold weather during April but is now rising. Range and crop conditions are fair to good. The runoff this season will not approach that of last year but is expected to be sufficient to meet the irrigation needs of the valley.

BIG HORN (WIND RIVER). For this stream, and its tributaries, the present water content of the snow averages 10 inches, last year at this time it was 11. The Lander and Wind River districts show the greatest increase in snow during April. On the Blue Ridge snow course the increase in water content was 9 inches and on the South Pass course nearly 6 inches. There was little or no accumulation in the upper Wind River drainage during the month. The heavy April snow storms have blanketed the entire irrigated areas throughout the valley, leaving the soil practically saturated. Farming operations are considerably delayed. The present reservoir storage for irrigation is considerably more than last year and present indications are favorable that all reservoirs will fill to capacity. Because of the heavy April snow cover maximum stage of the river can be expected. It is definite that a considerable amount of the runoff will flow out of the State unused during June.

POWDER AND TONGUE RIVERS. The outlook for the coming season's irrigation supply has improved over the past month, particularly for the Powder. On the Sour Dough snow course the April increase in water content was 10 inches. Only a slight increase during the month was observed on the Tongue river drainage. In comparison



with last year at this time, both the Powder and Tongue have from 4 to 5 times the amount of water in snow storage. The supply of water for irrigation in these valleys is therefore expected to exceed somewhat that in 1943 and will be ample to meet all requirements during the first part of the season but is likely to be moderately short after August first.

NORTH PLATTE RIVER. The coming season's irrigation supply outlook is now somewhat improved over that of a month ago. On the average the water content of the snow increased one inch during April and the resulting total flow of the North Platte may exceed 500,000 acre-feet at Saratoga. The two high snow courses on this drainage, Old Battle and North French Creek, have respectively 29 and 26 inches of water in the snow as compared with 30 and 32 inches last year at this time. The average water content of the snow over this drainage is 14.8 inches, last year it was 11.4. The reservoir storage is now increasing favorably, building up from 687,000 acre-feet April 30, to 715,000 on May 7th. Last year the May first storage totaled 828,000. Storage in the Pathfinder Irrigation District reservoirs, Alice and Minatare, aggregates 44,000 acre-feet, last year 60,000. Throughout the entire irrigated area of the North Platte Valley the soil moisture is excellent and planting retarded. In some areas irrigation will be withheld until May 20th or later, thus permitting further storage of the spring runoff. Crop and range conditions are now good to excellent. Stream flow is somewhat below normal due to cool weather. With the continuing rate of reservoir storage, soil in fine condition, and somewhat more water in the snow on the drainage than last year, it is probable that all irrigation demands this season will be fully satisfied with a reasonable amount of carry-over for use next year.

SWEETWATER RIVER. The general snow cover on this drainage is equal to or better than it was a year ago. During April the water content of the snow on the Grannier Meadow course gained  $5\frac{1}{2}$  inches which now equals the May first 1943 figure. The runoff into the Pathfinder Reservoir this season, April-July period, will exceed 60,000 acre-feet.

LARAMIE RIVER. The outlook for the coming season's runoff in the Laramie River and its tributaries is now improved over that of April first. During the past month there was also an inch accumulation in the water content as an average over this drainage, and the present water in snow storage is 11 inches as compared with 7 inches last year at this time. Because of the now favorable conditions the April-July river flow at Jelm may reach a total of about 110,000 acre-feet. There will be excess water for further storage in the Wheatland reservoirs. Throughout the Big and Little Laramie valleys the soil moisture conditions are good to excellent, crop and range conditions are improving and stream flow slightly below normal. Foothill snow is just starting to melt and the runoff will soon reach normal stage. The water supply will be satisfactory this season for meeting the irrigation needs with the possibility of some water flowing out unused.

#### COLORADO

SOUTH PLATTE AND TRIBUTARIES. The general outlook over the South Platte as a whole, is approximately one-third better than last year at this time and much improved over April. For the drainage area, above Denver, the present water content of the snow is 8 inches as compared with nearly 5 last year, Crow Creek is now



6.5 inches and last year the ground was bare, Poudre this year 12, last year 10, Big Thompson 17 inches, which is practically identical with that of last year, St. Vrain 17, last year 15, Boulder 13 and 11, and Clear Creek 17 and 12. The average April accumulation in the water content of the snow over the watershed of the South Platte was about  $3\frac{1}{2}$  inches. The greatest amount,  $7\frac{1}{2}$  inches during the month, was on the St. Vrain drainage. Because of the heavy April snow accumulations on some of the tributary streams revisions of the April forecast appears necessary. It is now estimated that the April-July 1944 runoff for the Poudre will approximate 300,000 acre-feet, the St. Vrain 100,000 and Clear Creek 150,000. The season's water supply for irrigation throughout the entire drainage will be abundant, and all the principal reservoirs will fill to capacity. The irrigated lands now have excellent soil moisture and the stream flow is normal with constantly increasing daily discharge. The present water content of the snow on Deadmans Hill, tributary to the Poudre and Laramie Rivers, now is 18.2 inches, the largest amount recorded for May first over the past 8 years.

GROUND WATER. The ground water in the Poudre, Lone Tree and Pawnee valleys, on the South Platte drainage area, is generally higher than it was a year ago. In the vicinity of Wellington the water table is about 6 feet higher and in the Lone Tree Valley as much as 3 feet in some places. For the Box Elder, Kiowa, Bijou and Beaver valleys in the lower South Platte, there was an average drop of  $\frac{1}{2}$  to 1 foot as compared with last year at this time. Along the main river valley the ground water level is about 1 foot lower.

ARKANSAS. The outlook for the coming season's irrigation water supply in the Arkansas Valley is now very favorable. The peak flow during the period of maximum snow melt will exceed somewhat the average June stage of the river. Excess flow over direct irrigation demand will provide for additional storage in many reservoirs. Runoff in the Purgatoire River should provide at least 50,000 acre-feet for storage in the new John Martin reservoir. The runoff from snow melt in the Fountian will probably exceed that of former years because of above normal snow cover in the Black Forest area of this drainage. Reservoir storage in this valley is now the same as last year. Adverse weather conditions have greatly retarded spring farm operations and thus permit of further storage before urgent demands are made for the use of river water for direct irrigation. There will be no shortage of irrigation water in the Arkansas Valley this year.

GROUND WATER. The ground water level in the Arkansas Valley from Rocky Ford to Pueblo is approximately the same as that of a year ago.

#### SOUTH DAKOTA

The present outlook for the season's irrigation water supply, Belle Fourche project, is very favorable at this time. Backward spring weather had delayed planting and the start of the irrigation season will be late this year. Soil moisture conditions are excellent at this time and stream flow normal. Snow cover generally over the watersheds tributary to the Belle Fourche reservoir has been normal or better this past winter and spring and because of the delayed use of water for direct irrigation the opportunity for further storage is now much better than it has been in recent years.



MISSOURI AND ARKANSAS RIVER WATERSHEDS  
Summary of Federal and State Cooperative Snow Surveys  
Issued May 10, 1944, at Fort Collins, Colorado

Main Drainage and No. Snow Course	Local Drainage	State	Location		Elev.	National Forest	May 1 Snow Course Measurements					
			Locality	Descrip- tion			Av. © 1943	In.	1944	Av. © 1943	In.	1944
JEFFERSON RIVER												
6	Camp Creek*	Idaho	6mi. N. Spencer	21-13N-36E	6800	Targhee	--	--	--	--	--	In.
7	Moose Creek*	"	3mi. S. Gibbons P.	27-27N-21E	6200	Salmon	--	--	--	--	--	In.
7	East Fork R. S.*	Mont.	13mi. NE. Sula	16-2N-17W	5400	Bitterroot	0.0	0.0	42.2	17.6	0.0	14.4
10	Gibbons Pass	"	Gibbons Pass	4-2S-19W	7100	"	42.0	60.0	4.9	5.4	30.0	1.6
30	Pipestone Pass	"	Pipestone Pass	11-1N-7W	7200	DeerLodge	4.9	4.3	42.2	17.6	1.4	1.6
	Elkhorn Hot Spgs	"	8mi. N. Polaris	15-4S-12W	8450	BeaverHead	35.6	44.9	44.8	11.7	18.1	13.5
31	Storm Lake	"	15mi. W. Anaconda	19-4N-13W	8100	DeerLodge	27.4	36.4	30.8	10.3	16.5	9.8
Average for Drainage												
MADISON RIVER												
2	Aster Creek* p	Wyo.	Lewis Lake	44-3N110-6W	7700	Yel. Nat. P.	62.8	98.4	53.7	27.4	50.8	20.1
8	Lewis L. Divide* p	"	3mi. S. Lewis L.	44-2N110-7W	7900	"	87.5	118.0	66.0	39.5	62.5	25.6
11	Norris Basin	"	Norris Basin	44-3N110-7W	7500	"	--	--	--	--	--	--
3	Big Springs*	Idaho	Big Springs	34-14N-44E	6500	Targhee	7.4	16.7	3.8	2.6	7.4	1.2
16	West Yellowstone	Mont.	W. Yellowstone	34-13S-5E	6700	Gallatin	21.3	35.8	23.3	9.1	17.6	8.1
	Twenty-one Mile	"	8mi. S. Gallatin	1-11S-5E	7150	Yel. Nat. P.	5.4	2.2	1.9	2.2	0.9	0.5
	Hebgen Dam	"	Hebgen Dam	22-11S-3E	6550	Gallatin	36.9	54.2	29.7	16.2	27.8	11.1
Average for Drainage												
GALLATIN RIVER												
	Devil's Slide	Mont.	20mi. S. Bozeman	14-5S-6E	8100	Gallatin	54.8	55.9	57.6	19.6	24.4	18.1
	Hood Meadow Extn.	"	14mi. "	22-4S-6E	6600	"	10.0	4.8	18.2	3.0	1.7	4.9
	Mystic Lake No. 1	"	12mi. SE.	31-3S-7E	6600	"	--	--	--	--	--	--
	Mystic Lake No. 2	"	"	31-3S-7E	6600	"	--	--	--	--	--	--
	Twenty-One Mile	"	8mi. S. Gallatin	1-11S-5E	7150	Yel. Nat. P.	21.3	35.8	23.3	9.1	17.6	8.1
	Ross Peak	"	12mi. N. Bozeman	10-1N-6E	7000	Gallatin	--	--	--	--	--	--
	New World Trail	"	8mi. SE.	13-3S-6E	7000	"	28.7	32.2	33.0	10.6	14.6	10.4
Average for Drainage												

\*On adjacent drainage

©Average for period of record  
April 15 Readings.



**MISSOURI AND ARKANSAS RIVER WATERSHEDS**  
**Summary of Federal and State Cooperative Snow Surveys**  
**Issued May 10, 1944, at Fort Collins, Colorado**

No.	Main Drainage and Snow Course	Local Drainage	State	Location		Elev.	National Forest	May 1 Snow Cover Measurements			
				Locality	Description			In.	In.	Av. O	Av. Water Content
								1943	1944	1943	1944
								In.	In.	In.	In.
<b>MISSOURI RIVER (Headwaters)</b>											
6	Chessman Res.	Tennile	Mont.	11mi. SW. Helena	2-8N-5W	6200	Helena	3.1	6.2	2.4	0.9
17	Goat Mountain	South Fork	"	26mi. W. Gilman	47-5N12-9W	7000	Lewis & Clark		--		1.4
36	Stemple Pass	Canyon Creek	"	Stemple Pass	16-13N-7W	6900	Helena	14.5	28.2	17.8	--
41	Tennile Cr. Lower	Tennile	"	17mi. SW. Helena	13-8N-6W	6250	"	4.0	7.8	3.4	9.8
42	Tennile " Middle	"	"	"	13-8N-6W	6800	"	17.7	23.5	19.4	1.9
43	Tennile " Upper	"	"	"	19-8N-5W	8000	"	26.2	30.0	25.0	7.9
	Grasshopper	Grasshopper Cr.	"	6mi. S.W. S. Spgs.	19-9N-8E	7000	Lewis & Clark		--	41.2	11.0
	King's Hill	Belt Creek	"	21mi. N.W. S. Spgs.	35-13N-7E	7950	"				--
	Orville Harris	Mussellshell R	"	12mi. E.W. S. Spgs.	31-10N-9E	6500	"				12.8
	Half Moon	Judith River	"	19mi. S. Lewiston	22-12N-18E	6000	"				
					Average for Drainage			13.1	19.1	13.6	4.2
<b>MARIAS RIVER</b>											
7	Desert Mountain*	Cutbank Cr.	Mont.	4mi. S. Belton	24-31N-19W	5600	Flathead	14.8	17.8	12.0	6.0
20	Marias Pass	Two Medicine	"	Summit	48-3N13-4W	5250	Clacier NF	11.0	22.2	3.8	7.7
					Average for Drainage			12.9	20.0	7.9	10.6
											9.2
<b>YELLOWSTONE RIVER</b>											
14	Dome Lake	Goose Creek	Wyo.	Dome Lake	11-53N-87W	8800	Big Horn				
40	Lupine Creek	Lupine Creek	"	11mi. SE. Gardiner	44-9N110-6W	7300	Yel. Nat. P.				
41	Blacktail Deer Cr.	Elk Tail Deer	"	11mi. "	44-9N110-6W	7500	"				
43	Lodge Pole	Lodge Pole Cr.	"	34mi. NW. Cody	32-56N-106W	8200	Shoshone	21.5	37.9	26.9	16.8
3	Canyon	Tower Creek	"	8mi. N. Canyon Jct	44-7N110-5W	7750	Yel. Nat. P.				
	Cook City	Soda Bottle Cr.	Mont.	Cook City	25-9S-14E	7400	Absaroka				
7	Lake Camp	Yellowstone	Wyo.	3mi. NE. Fishing Br.	44-6N110-4W	7850	Yel. Nat. P.				
					Average for Drainage			21.5	37.9	26.9	7.1
											16.8

\*Adjacent Drainage

©Average for period of record



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				Locality	Description			Av. Snow Depth	Av. Water Content	1943	1944	1943	1944
								In.	In.	In.	In.	In.	In.
32	SHOSHONE RIVER	Middle Cr.	Wyo.	Sylvan Pass	12-52N-110W	7100	Yel. Nat. P.	19.0	7.0	14.5	In.	In.	5.0
33	Sylvan Pass	Hardpan Cr.	"	27 mi. SW. Cody	25-51N-106W	9500	Shoshone	53.7	21.3	34.7	34.7	16.7	16.7
50	Brooks Lake #3*	Shoshone R.	"	Brooks Lake	23-44N-110W	9200	Washakie	36.4	14.2	24.6	24.6	10.8	10.8
					Average for Drainage								
13	BIGHORN RIVER	Tensleep Cr.	Wyo.	15 mi. NE. Tensleep	30-49N-86W	8300	Bighorn	11.9	3.9	0.1	0.1	5.6	5.6
16	Range Creek	Ranger Creek	"	14 mi. E. Shell	32-53N-88W	8800	"	21.0	6.6	7.0	7.0	8.8	8.8
14	Dome Lake*	Shell Cr.	"	Dome Lake	11-53N-87W	8800	Bighorn	19.4	6.0	2.4	2.4	15.0	15.0
45	Sawmill Glade	Popo Agie R.	"	13 mi. SW. Lander	3-31N-101W	8500	Washakie	36.0	11.3	12.8	12.8	19.3	19.3
46	Blue Ridge	" "	"	15 mi. " "	23-31N-101W	9500	"	35.8	11.9	18.0	18.0	17.0	17.0
47	South Pass	" "	"	19 mi. " "	13-30N-101W	9000	"	6.8	2.3	2.3	2.3	0.0	0.0
48	Wood River	L. Popo Agie R.	"	42 mi. SW. Cody	28-46N-103W	8000	Shoshone	2.0	0.8	1.6	1.6	16.7	16.7
49	Sheridan Cr. R. S. #2	Wood River	"	16 mi. NW. Dubois	3-42N-109W	7500	Washakie	53.7	21.3	34.7	34.7	12.6	12.6
50	Brooks Lake #3	Wind River	"	Brooks Lake	23-44N-110W	9200	"	29.7	8.8	11.2	11.2	5.0	5.0
51	St. Lawrence R. S.	St. Lawrence Cr.	"	27 mi. NW. Lander	26-1N-4W	9000	Shos. I. R.	--	--	--	--	0.0	0.0
52	Mosquito Park R. S.	St. Trout Creek	"	18 mi. " "	23-2S-3W	9500	" "	19.2	6.6	12.3	12.3	10.0	10.0
53	DuNoir	Wind River	"	9 mi. NW. Dubois	27-42N-108W	8750	Washakie	5.3	2.5	8.5	8.5	10.9	10.9
54	T-Cross Ranch	Horse Creek	"	12 mi. N. Dubois	1-43N-107W	8000	"	23.4	8.0	10.9	10.9	5.7	5.7
					Average for Drainage								
14	TONGUE RIVER	Goose Cr.	Wyo.	Dome Lake	11-53N-87W	8800	Bighorn	3.7	2.6	0.0	0.0	9.8	9.8
17	Dome Lake	E. Goose Cr.	"	20 mi. SW. Sheridan	4-53N-86W	7700	"	8.7	2.6	0.0	0.0	13.5	13.5
					Average for Drainage								
30	POWDER RIVER	Middle Fork	Wyo.	23 mi. W. Kaycee	18-43N-85W	7500	Off Forest	12.4	3.9	0.1	0.1	11.6	11.6
31	Red Fork	Sour Dough Cr.	"	10 mi. W. Klondike	17-49N-84W	8500	Bighorn	19.4	5.7	5.2	5.2	2.6	2.6
					Average for Drainage			15.9	4.8	32.1	32.1		

\*On adjacent drainage

@Average for period of record



## MISSOURI AND ARKANSAS RIVER WATERSHEDS

## Summary of Federal and State Cooperative Snow Surveys

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Main Drainage and Snow Course	Local Drainage	State	Location		Description	Elev.	National Forest	May 1 Snow Cover Measurements					
			Locality					Av. Snow Depth, Av. Water Content	1943	1944	1943	1944	
No.								In.	In.	In.	In.	In.	In.
NORTH PLATTE RIVER													
1	Cameron Pass	Colo.	Cameron Pass	2-6N-76W	10300	Roosevelt	61.5	40.0	62.6	23.1	18.0	17.4	
7	Park View	"	7mi. SE. Rand	24-5N-78W	9200	Routt	19.7	0.7	26.6	7.2	0.1	7.1	
8	Columbine Lodge	"	Rbt. Bars Pass	21-5N-82W	9300	"	45.0	29.0	59.1	18.8	12.5	20.1	
51	Big Creek Lake	"	5mi. SW. Pearl	9-11N-82W	9000	"	15.8	4.7	24.0	5.1	1.6	7.4	
62	Willow Creek P.*	"	Willow Cr. Pass	1-4N-73W	9500	Arapaho	33.7	11.0	33.1	12.5	3.1	9.1	
7	Bottle Creek	Wyo.	7mi. SW. Encampmt	24-14N-85W	8200	Medicine Bow	21.3	4.4	28.3	7.7	2.0	6.6	
8	Webber Spring	"	10mi. W.	27-14N-85W	9000	"	44.3	26.9	47.1	17.4	12.1	15.8	
9	Old Battle	"	12mi. W.	29-14N-85W	9800	"	77.7	62.1	77.2	32.0	29.8	28.9	
37	North French Cr.	"	Cent/Saratoga	27-16N-80W	10200	"	80.9	65.3	75.9	32.7	32.0	26.3	
38	N. Barrett Cr. #2	"	"	30-16N-80W	9400	"	55.0	34.9	54.9	20.8	14.6	17.4	
39	Ryan Park #2	"	"	34-16N-81W	8400	"	18.4	0.0	25.5	6.3	0.0	6.8	
				Average for Drainage			43.0	25.4	46.8	16.7	11.4	14.8	
SWEETWATER RIVER													
29	Grannier Meadows	Wyo.	20mi. SW. Lander	19-30N-100W	9000	Washakie	33.2	37.0	56.6	11.8	16.8	18.0	
47	South Pass*	"	19mi. "	13-30N-101W	9000	"	35.8	41.6	56.2	11.9	18.0	17.0	
				Average for Drainage			34.5	39.3	56.4	11.8	17.4	17.5	
LARAMIE RIVER													
3	Brooklyn Lake	Wyo.	7mi. NW. Centennial	11-16N-79W	10200	Medicine Bow	54.0	43.5	62.4	21.7	19.9	20.7	
11	Fox Park	"	Fox Park	21-13N-78W	9200	"	19.6	3.5	31.7	7.3	1.4	10.4	
34	Pole Mountain #2*	"	10mi. SE. Laramie	35-15N-72W	8700	"	7.1	0.0	21.7	1.9	0.0	6.5	
35	Libby Lodge #2	"	3mi. NW. Centennial	29-16N-78W	8700	"	10.5	4.4	25.9	3.4	2.2	7.7	
36	Hairpin Turn #2	"	5mi. NW.	24-16N-79W	9500	"	29.5	24.4	36.3	9.9	10.4	10.4	
4	W. Port-G-P. Tunnel	Colo.	4mi. N. Chambers	7-8N-75W	8600	Roosevelt	11.9	0.0	20.6	3.9	0.0	5.1	
50	Deadman Hill*	"	10mi. W. R. Feather	26-10N-75W	10200	"	49.5	--	66.8	16.3	--	19.6	
71	Deadman Hill #2*	"	8mi. SW.	6-9N-74W	10200	"	41.9	--	59.3	13.3	--	16.8	
88	Roach	"	3mi. NW. Glendevy	5-10N-77W	9300	"	53.1	42.8	58.9	18.8	15.7	17.3	
				Average for Drainage			26.5	16.9	36.8	9.6	7.1	11.2	

\*On adjacent drainage

@Average for period of record



MISSOURI AND ARKANSAS RIVER WATERSHEDS  
Summary of Federal and State Cooperative Snow Surveys  
Issued May 10, 1944, at Fort Collins, Colorado

Main Drainage and No. Snow Course	Local Drainage	State	Location		Elev.	National Forest	May 2 Snow Cover Measurements			
			Locality	Descrip- tion			Av. Snow Depth	Av. Water Content	1943	1944
							In.	In.	In.	In.
<b>CHEYENNE RIVER</b>										
1	Upper Spearfish	S. Dak.	2 mi. SW. Spearfish	21-3N-1E	6500	Black Hills				
2	Upper Castle	"	11 mi. NW. Deerfield	24-2N-1E	6800	"				
3	Deerfield	"	3 mi. NW. Deerfield	23-1N-2E	6010	"				
				Average for Drainage						
<b>SOUTH PLATTE RIVER</b>										
14	Hoosier Pass	Colo.	Hoosier Pass	13-8S-78W	11400	Pike	32.6	24.0	45.6	10.5
15	Fairplay	"	Fairplay	33-9S-77W	10000	"	0.6	0.0	5.4	0.1
83	Jefferson Cr. #2	"	5 mi. NW. Jefferson	14-7S-76W	10100	"	14.2	14.9	36.8	3.9
				Average for Drainage			15.8	13.0	29.3	4.8
							7.1	0.0	21.7	1.9
<b>CROW CREEK</b>										
34	Pole Mountain #2	Wyo.	10 mi. SE. Laramie	35-15N-72W	8700	Medicine Bow				
<b>POUDRE RIVER</b>										
1	Cameron Pass	Colo.	Cameron Pass	2-6N-76W	10300	Roosevelt	61.5	40.0	62.6	23.1
2	Chambers Lake	"	Chambers Lake	6-7N-75W	9000	"	9.4	1.4	15.9	3.5
3	Big South	"	2 mi. E. Chambers	1-33-8N-75W	8600	"	1.5	0.0	6.3	0.5
50	Deadman Hill	"	10 mi. W. R. Feather	26-10N-75W	10200	"	49.5		66.8	16.3
65	Lake Irene*	"	1 mi. SW. Milner P.	8-5N-75W	10600	Ry. Mtn. N.P.	65.2	48.8	67.8	23.4
68	Hour Glass Lake	"	2 mi. NW. Fingree P.	18-7N-73W	9500	Roosevelt				
71	Deadman Hill #2	"	8 mi. SW. R. Feather	6-9N-74W	10200	"	41.9	23.4		10.9
				Average for Drainage			34.4	22.6	59.3	13.3
									38.2	12.6
<b>BIG THOMPSON</b>										
65	Lake Irene*	Colo.	1 mi. SW. Milner P.	8-5N-75W	10600	Ry. Mtn. N.P.	65.2	48.8	67.8	23.4
95	Hidden Valley #2	"	9 mi. W. Estes P.	23-5N-74W	9550	"	45.4	33.9	49.4	12.7
				Average for Drainage			55.3	41.4	58.6	18.0

\*On adjacent drainage  
Average for period of record



## MISSOURI AND ARKANSAS RIVER WATERSHEDS

Summary of Federal and State Cooperative Snow Surveys  
Issued May 10, 1944, at Fort Collins, Colorado.

Main Drainage and No. Snow Course	Local Drainage	Location		Elev.	National Forest	May 1 Snow Cover Measurements								
		State	Locality.			Descrip- tion	Av. Snow Depth	Av. Water Content	1943	1944	1944			
						In.	In.	In.	In.	In.	In.	In.	In.	In.
41	ST. VRAIN RIVER Wild Basin	Colo.	5mi. W. Allens P.	24-3N-74W	10000	Py. Mtn. N.P.	38.0	37.0	50.8	13.3	14.6	17.1		
5 60	BOULDER CREEK E. Port. Moffat T. University Camp #2	Colo.	East Portal	2-2S-74W	9400	Roosevelt	5.5	0.0	12.3	1.7	0.0	4.6		
		"	5mi. SW. Ward	28-1N-73W	10300	"	55.9	50.0	63.2	20.5	22.6	21.6		
		Average for Drainage				30.7	25.0	37.8	11.1	11.3	13.1			
61	LOVELAND PASS #2	Colo.	10mi. W. Georgetown	27-4S-76W	10100	Arapaho	38.1	15.0	50.7	12.9	6.0	16.4		
97	GRIZZLY PEAK*	"	1mi. W. Loveland P.	2-5S-76W	11250	"	57.1	45.1	59.4	18.4	17.2	17.3		
ARKANSAS RIVER			Average for Drainage				47.6	30.0	55.0	15.6	11.6	16.8		
19	Tennessee Pass	Colo.	Tennessee Pass	21-8S-80W	10200	Cochetopa	15.5	0.0	25.4	5.1	0.0	8.6		
21	Twin Lakes Tun.	"	9mi. W. Twin Lakes	22-11S-82W	10500	"	25.4	14.1	36.6	8.0	5.2	10.3		
42	Marshall Creek*	"	Marshall Pass	24-48N-6E	10800	"	29.9	11.7	45.5	10.3	4.9	14.1		
43	Poncha Creek	"	"	19-48N-7E	10500	"	23.3	1.5	41.6	8.1	0.8	13.2		
72	Whiskey Creek #2	"	Whiskey Cr. Pass	37-2N105-2W	10300	Maxwell Gr.	16.8	0.0	27.3	6.1	0.0	8.9		
74	LaVeta Pass #2*	"	LaVeta Pass	22-28S-70W	9300	San Cristótopa	11.6	0.0	35.3	4.2	0.0	11.3		
78	Four Mile Park #2	"	3mi. SW. Twin L.	23-11S-81W	9700	Cochetopa		0.0			0.0			
79	Fremont Pass #2	"	Fremont Pass	2-8S-79W	11400	Arapaho	49.5	46.9	49.4	16.8	17.6	14.7		
81	Blue Lakes #2	"	15mi. SW. LaVeta	30-31S-69W	10000	San Isabel	22.0	0.8	44.8	7.7	0.2	14.0		
92	Monarch Pass	"	Monarch Pass	16-49N-6E	10500	Cochetopa	57.9	28.3	64.1	20.2	11.1	21.3		
			Average for Drainage				28.0	11.5	41.1	9.6	4.4	12.9		

\*On adjacent drainage  
Coverage for period of record



## MISSOURI AND ARKANSAS RIVER WATERSHEDS

## RESERVOIR STORAGE

Reservoir Storage in Thousands of Acre-Feet, Colorado and Wyoming, as of May 1, for the years 1935 to 1944, inclusive. (Based on data gathered by State Engineer of Colorado, U. S. Bureau of Reclamation and other agencies)  
 A = Percentage of capacity. B = Percentage of 10-year average. C = Percentage of filling forecast for 1944.

Reservoir	Capacity	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	10 yr. Avg.	A	B	C
	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	%	%	%
<b>SOUTH PLATTE DRAINAGE</b>															
Eleven Mile	81.9	--	4.8	16.4	27.4	66.8	70.5	81.9	81.9	81.9	81.9	57.1	100	143	100
Cheeseman	79.0	18.7	32.0	48.7	34.4	79.1	59.8	49.7	79.1	79.1	69.6	55.0	88	126	100
Marston	18.9	13.8	14.2	16.7	16.7	15.4	16.6	16.6	15.4	15.6	16.4	15.7	87	104	100
Barr	32.2	7.4	11.4	20.0	13.3	25.6	11.0	10.5	28.6	27.3	28.8	18.4	89	156	100
Milton	24.4	1.8	3.5	11.0	4.0	15.9	3.9	4.4	19.6	19.6	17.1	10.1	70	169	100
Standley	18.5	2.8	13.4	15.8	12.2	15.7	8.1	11.3	17.9	17.0	14.0	12.8	76	109	100
Marshall	10.3	0.1	4.1	6.0	6.9	6.2	1.6	5.4	8.7	3.1	4.7	4.7	46	100	100
Antero	33.0	0.0	0.0	0.0	0.0	11.5	11.1	0.0	13.0	23.8	21.3	8.1	64	263	100
Horse Creek	20.6	0.0	0.0	5.2	1.1	13.9	0.0	0.0	12.7	12.6	12.1	5.8	59	209	100
Riverside	57.5	12.7	44.1	47.0	30.7	54.6	21.0	30.5	55.7	57.5	56.5	41.0	98	138	100
Empire	37.7	0.0	18.6	24.7	23.0	34.4	23.9	20.3	35.5	34.9	34.1	24.9	91	137	100
Jackson Lake	35.4	31.7	31.2	33.4	33.2	34.1	33.4	33.7	35.4	33.9	35.4	33.5	100	106	100
Prewitt	32.8	4.2	12.0	19.2	9.7	28.6	7.3	6.8	28.4	28.8	30.0	17.5	92	171	100
Point of Rocks	70.0	30.1	56.8	64.3	38.0	66.4	35.1	44.2	67.5	68.6	70.6	54.2	100	130	100
Julesburg	28.2	22.8	22.0	20.9	22.9	21.5	22.4	23.1	23.0	22.9	22.2	22.4	79	99	100
Barker Meadow	11.7	3.4	3.1	2.7	2.7	1.6	3.6	7.9	2.6	4.6	2.7	3.5	23	77	100
Albion	1.1	1.1	0.0	1.1	1.1	0.7	0.7	1.1	1.1	1.1	1.1	0.9	100	122	100
Union	12.7	0.0	2.9	7.5	3.1	12.6	2.6	0.8	6.7	12.7	8.2	5.7	65	144	100
Lake Loveland	14.3	0.7	3.0	1.0	1.0	12.3	0.2	1.2	7.0	13.2	9.7	4.9	68	198	100
Boyd Lake	44.0	2.3	3.1	3.0	0.0	20.0	0.2	0.0	0.0	33.7	26.3	8.9	60	295	100
Lone Tree	9.2	1.2	9.0	9.0	9.0	9.2	4.0	8.7	9.2	9.2	9.3	7.8	100	119	100
Mariano	5.4	0.4	3.0	3.0	3.9	4.8	1.2	2.7	4.6	4.6	4.0	3.2	74	125	100
Windsor	18.6	2.8	11.2	10.5	11.8	17.7	5.0	11.8	14.8	17.2	14.6	11.7	79	125	100
Cache la Poudre	9.5	2.8	5.7	7.3	7.5	9.2	4.7	7.2	9.3	10.1	9.0	7.3	95	123	100
Fossil Creek	11.6	2.9	8.1	7.1	5.5	11.7	3.7	5.6	10.3	10.7	10.9	7.6	94	144	100
Terry	8.2	4.1	4.2	4.1	4.1	5.9	4.1	4.0	6.4	6.2	6.2	4.9	76	126	100
Halligan	6.4	3.0	2.9	4.1	4.9	4.3	1.7	0.0	2.8	6.4	5.2	3.5	81	148	100
Chamber's Lake	8.8	0.7	2.8	2.4	3.1	7.3	2.2	3.3	3.1	4.2	2.4	3.2	27	175	100
Cebb Lake	34.3	0.7	4.8	1.5	0.5	0.0	1.9	0.8	0.8	11.4	8.4	3.1	24	271	100
Black Hollow	8.0	0.2	1.7	0.8	1.5	5.3	2.1	1.5	2.8	5.4	4.6	2.6	58	177	100

Some averages for shorter periods.



## RESERVOIR STORAGE, Cont.

A - Percentage of capacity. B = Percentage of 10-year average. C - Percentage of filling forecast for 1944.

Reservoir	Capacity Ac-ft.	1935 Ac-ft.	1936 Ac-ft.	1937 Ac-ft.	1938 Ac-ft.	1939 Ac-ft.	1940 Ac-ft.	1941 Ac-ft.	1942 Ac-ft.	1943 Ac-ft.	1944 Ac-ft.	10-yr. Avg. Ac-ft.	A %	B %	C %
<b>ARKANSAS DRAINAGE</b>															
Twin Lakes	57.9	13.8	14.5	14.4	7.2	28.4	15.3	11.5	37.5	27.0	29.0	19.9	50	146	100
Sugar Loaf	17.4	4.2	6.5	5.1	2.4	6.9	1.7	5.2	13.9	12.0	7.6	6.6	44	115	75
Clear Creek	11.4	0.2	0.2	0.0	0.7	3.5	1.0	0.8	5.1	8.9	2.6	2.3	23	113	100
Meredith	41.9	0.0	0.0	3.0*	0.0	24.3	0.0	0.0	33.3	34.1	30.1	12.5	72	241	100
Horse Creek	26.9	0.0	0.0	7.9	0.0	8.3	0.0	0.0	11.6	19.5	8.3	5.6	31	148	75
Adobe Creek	61.6	0.0	0.0	1.7	0.0	8.2	0.0	0.0	58.2	46.0	47.3	16.1	77	294	100
Cucharas	40.0	—	4.3	25.2	4.3	2.1	0.4	3.1	25.7	0.2	3.5	7.6	9	46	50
Two Buttes	40.9	3.0	8.8	28.7	25.5	26.9	14.2	12.0	13.3	9.0	0.1	14.2	1	1	—
John Martin	655.0	—	—	—	—	—	—	—	—	—	—	—	9	132	25
Great Plains	—	0.0	0.0	0.0	0.0	33.4	0.0	0.0	63.6	30.8	60.1	45.4	—	189	60
Model	15.0	0.0	2.6	1.8	3.0	8.5	1.3	5.3	9.1	6.4	7.8	4.6	52	169	100
<b>NORTH PLATTE DRAINAGE</b>															
Pathfinder	1070.0	133.2	263.5	343.8	352.8	430.3	77.7	92.0	261.9	318.6	386.9	266.1	36	145	**
Guernsey	72.7	24.8	44.7	37.5	52.5	42.0	47.1	50.3	49.5	44.8	26.6	42.0	37	63	**
Seminole	1020.0	—	—	—	0.0	85.5	66.6	98.8	160.8	343.9	168.8	132.1	17	128	**
Alcova	165.8	—	—	0.0	99.4	123.5	92.8	74.3	133.4	120.4	104.8	93.6	63	112	**
Wheatland	70.4	13.0*	35.0*	20.9	26.1	51.0	9.0	17.7	30.0	56.0	42.8	30.2	61	142	100
Lake Alice	13.8	0.0	2.2	5.3	3.0	3.8	0.0	2.8	4.5	6.5	3.3	3.1	24	106	100
Minatare	60.8	5.3	18.1	8.1	30.6	38.5	16.9	13.9	38.1	53.8	40.8	26.4	67	155	100
Kingsley-Sutherland	2180.0	—	57.5	—	—	82.0	89.0	170.0	540.0	977.0	854.0	395.6	39	216	45
<b>BIG HORN DRAINAGE</b>															
Bull Lake	155.0	—	—	—	0.0	42.8	38.8	15.7	67.7	46.7	79.8	41.6	51	192	100
Pilot Butte	30.0	—	—	—	21.5	19.8	24.7	21.7	20.4	18.2	23.7	21.4	79	111	100
<b>SHOSHONE DRAINAGE</b>															
Shoshone	456.6	354.8	387.7	342.1	317.1	394.3	106.9	36.9	357.0	391.9	304.3	299.3	67	102	100
<b>SNAKE DRAINAGE</b>															
Jackson Lake	847.0	206.0	331.5	504.2	430.6	620.8	492.7	332.1	462.8	429.0	747.5	455.7	88	164	100
<b>CHEYENNE DRAINAGE</b>															
Belle Fourche	198.1	68.9	78.0	50.6	104.5	64.5	43.8	60.6	155.5	159.7	151.2	93.7	76	161	100

pSome averages for shorter periods

\*Estimated

\*\*Maximum storage in North Platte reservoirs in Wyoming will reach 1,000,000 acre-feet.



Handwritten text on lined paper, appearing to be a list or ledger with multiple columns and rows of entries. The text is faint and mostly illegible due to fading and bleed-through from the reverse side. The entries are organized into several columns, with some rows containing more data than others. The overall appearance is that of an old, weathered document.